Rotor drive comes from driven post or shaft **28**, the center of which defines the rotor axis of rotation. As can be seen in FIGS. **1** and **2**, the axis of rotation is displaced from the geometric stator center **20**. The rotor drive post **28** is connected to rotor body **24** by means of a drive pin **30** passing in sliding fashion through a bore in post **28** and connected at both ends to rotor body **24** in holes **49**. (Pin **30** might alternately be slidingly secured at one end in the bore or a blind hole in post **28** and connected at the other end to rotor body **24**, with sufficient length to maintain the drive connection throughout the pump cycle.)

Referring now to FIGS. **4**A-**4**F, a description of operation will be given. FIGS. **4**A-**4**F represent progressively different degrees of rotor position over about 180° (degrees) of travel in a clockwise direction. FIG. **4**C corresponds in rotor position to FIG. **2** and FIG. **4**F corresponds in rotor position to FIG. **1**.

In FIG. **4**A, the rotor **22** is partly expanded and is positioned such that both intake and exhaust ports **16**, **18** are open. Fluid begins to flow into the intake port **16** and the compression of the fluid in the volume above and to the right of the rotor is just beginning. In FIGS. **4**B and **4**C, the intake volume to the left of the rotor **22** continues to expand, creating suction that pulls fluid into the pump while the right hand volume continues to grow smaller. In FIGS. **4**D-**4**F the intake volume grows to maximum and the exhaust volume quickly goes to zero, expelling all fluid through port **16**. The cycle repeats every 180° of rotation.

Pump **10** can also be driven in reverse operation as a motor, in which fluid entering the stator chamber drives the rotor **22** rather than the rotor pumping the fluid through the chamber. Fluid pumped into exhaust port **18** will thus rotate the rotor **22** in reverse, i.e. counterclockwise in the Figures, until exiting the chamber through inlet **16** in a reverse of the 180° cycle described in reference to FIGS. **4**A-**4**F. Rotor **22** driven by the fluid entering exhaust port **18** accordingly rotates post **28** via pin **30** to effect work at some point outside the pump **10**.

It may also be possible to make the stator's inner wall **14** circular over only a portion of its circumference, for example by making the "base" of the wall **14** where the rotor bodies **24**, **26** bottom out (FIGS. **1** and **4**F) of constant and thus circular diameter, and by making some portion of the remainder of wall **14** a non-circular shape, such as egg-shaped. This would reduce the amount of rotor travel, and allow the trailing edges of the rotor bodies to maintain a wiping seal with inner wall **14** with less shifting movement.

It will finally be understood that the disclosed embodiments represent presently preferred forms of the invention, but are intended to be explanatory rather than limiting of the invention. Reasonable variation and modification of the invention as disclosed in the foregoing disclosure and drawings are possible without departing from the scope of the invention. The scope of the invention is defined by the following claims.

What is claimed:

1. A rotary pump comprising:

a stator defining a substantially closed chamber having a substantially continuous inner wall, with an intake port and an exhaust port being formed in the inner wall at spaced-apart locations;

a rotor eccentrically mounted within the chamber and in contact with the inner wall;

the rotor comprising a pair of crescentoid bodies with end surfaces disposed in end-to-end sliding contact with each other and rotatable together about an axis of rotation; and,

a spring element disposed between the pair of crescentoid bodies to urge at least a contact point on each of the crescentoid bodies into continuous wiping contact with the inner wall during rotor rotation.

2. A rotary pump as defined in claim **1**, wherein the contact points are adjacent the trailing ends of the pair of crescentoid bodies.

3. A rotary pump as defined in claim **2**, wherein the contact points are chamfered.

4. A rotary pump as defined in claim **1**, wherein each of the crescentoid bodies includes an outside surface that conforms to the inside surface of the inner wall.

5. A rotary pump as defined in claim **4**, wherein each of the crescentoid bodies is circumferentially asymmetric such that the leading end surfaces are smaller than the trailing end surfaces, the contact points being at the trailing end surfaces and capable of sliding radially outwardly to expand the effective rotor diameter.

6. A rotary pump as defined in claim **1**, wherein the spring element comprises an elongate rod extending between inside rotor body surfaces of the pair of crescentoid bodies, and a compression spring carried by the rod.

7. A rotary pump as defined in claim **1**, wherein the materials of construction for the pair of crescentoid bodies are chosen from the group consisting of plastics, ceramics, cermets and metals.

8. A rotary pump as defined in claim **1**, wherein the inner wall is circular.

9. A rotary pump as defined in claim **1**, wherein the inner wall is circular over a portion of its circumference corresponding to a rotary position of the rotor in which the outer circumference of one of the pair of crescentoid bodies is bottomed out against the inner wall.

10. A rotary pump as defined in claim **1**, further comprising an axial drive post located eccentrically in the chamber with respect to a geometric center of the chamber.

11. A rotary pump as defined in claim **10**, wherein one of the pair of crescentoid bodies is driven by a radial drive pin slidingly connected to the axial drive post and secured to the one of the pair of crescentoid bodies.

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